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ABSTRACT

Research has shown that the transition period from a man's completion of school to first full-time job and first marriage has become shorter in recent years. The purpose of this paper is to explain part of the time reduction in this transitional period. Early in the twentieth century the transition took about 18 years because many men left school at very young ages. Now the transition is occurring in ten years. Between the years 1919 and 1950, the duration of the school completion process for many males dropped and age at graduation fell. During the latter half of this period and up to 1971, the military draft was operating. However, students making normal progress were deferred, thereby allowing the earliest possible graduation. The median age at first marriage dropped approximately one year between 1947 and 1969, and seems to be a result of men completing school earlier. This post-World War II change in age at school completion may be important in explaining the post-World War II baby boom. Presently, the government is considering the reintroduction of the military draft as well as periods of general public welfare service for young people. Such policies may have strong unintended demographic consequences which should be considered in relation to population and social policy. (BC)

CHANGES IN THE TRANSITION TO ADULTHOOD

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CHANGES IN THE TRANSITION TO ADULTHOOD

Introduction

This paper comes from a research project whose aim is to construct statistical histories of the life cycle of birth cohorts in the United States from around 1900 to the present.

A previous paper from this project describes how cohorts of males move through the life cycle transitions which makeup the progression from school boy to married adult (Winsborough, 1978). It showed that recent cohorts move through this progression much more rapidly than did earlier ones.

The purpose of this paper is to explain how a part of this reduction came about. It will show the implications of this explanation for understanding cross-sectional change in the age-at-first-marriage distribution for males. The paper will conclude with the conjecture that a similar explanation may account for some portion of the post-War baby boom.

Previous Findings

Transitions investigated in the previous paper as a part of the overall progression from school boy to adult were:

1. Completing school.
2. Taking a first full-time job.
3. Entrance to and exit from the Armed Forces.
4. Entrance into first marriage.

The duration of each transition, i.e. the length of time it took a cohort to pass through the change, was measured as the difference in the age at which twenty-five percent and seventy-five percent of the cohort had

accomplished the passage. Figure 1 is a graph which shows these durations for selected cohorts. Data for this figure were computed from the Occupational Change in a Generation II supplement to the March, 1973 CPS and from the 1970 Census tabulation of age at first marriage. In the figure, age is arrayed on the x-axis. Birth years are arrayed on the y-axis. The top line for each birth year indicates the duration of the school exit process. The line begins at the age when 25% of the cohort had completed school, moves through the median age, indicated by a point, and terminates at the age at which 75% of the cohort completed school. The second line indicates the entrance-to-first-job duration. The third line indicates the duration of military service for those who ever served. The forth line indicates the duration of the first-marriage process. The main impression one gains from this figure is of the shortening of the progression as a whole. For the earliest cohorts the process took about 18 years. For recent cohorts it took slightly less than 10 years. Thus, the length of time a cohort spends in the transition from school boy to adult has almost halved.

As the cohort transitions between major life cycle phases become shorter, the phases themselves must surely appear more distinct and more age associated. If, as preliminary evidence indicates, other transitions have also decreased in duration, then increasing segmentalization of life along the age continuum is an objective as well as a subjective social trend.

How has this decline in the duration of the transition to adulthood come about? A first step in proposing an explanation is to consider the kind of process under consideration. A number of writers, most recently Elder (1974), have suggested that the timing, and perhpas the order,

of life cycle events are controlled by strong social norms. Hogan (1976) has recently shown that the majority of men move through the three transitions--school completion, labor force entrance, and marriage--in a typical order. Figure 2 reproduces Hogan's graph of the percent of five-year birth cohorts in each of three categories of temporal ordering of events by whether or not they have ever served in the military. Category A represents the typical ordering of events--school, job, marriage. Category B represents that ordering with one inversion. Category C represents two inversions. Although military service reduces the proportion of cohorts showing the typical ordering of events, a large fraction of both veterans and non-veterans show the normative ordering. Hogan also investiages, via a complex analysis, whether individuals respond to norms of ordering or simply to norms of an appropriate age for each transition. He concludes that order as well as appropriate age is important.

Formal Aspects of an Explanation

The existence of a strongly adhered-to sequence of events is important in thinking about how to explain change in the duration of the progression to adulthood. If individual transitions are "linked" by norms of ordering, than a change in the distribution of an early transition will be reflected into a change in a later one. Thus, if men usually marry only after completing school and if, over cohorts, fewer men drag out their school completion, then fewer men will marry at a late age. Thus, over cohorts, a "drawing towards the mean" of the right tale of the age at school completion distribution will yield a "drawing in" of the last quartile of the age-at-marriage distribution and a consequent shortening of the overall progression to adulthood. All this can occur without a "behavioral"

change in how people decide to marry.

Although this principle is simple in concept, it is more complex to detail how the first distribution in such a sequential process "reflects" into the subsequent one. Consider a simple example. Suppose it were impossible to marry until after school completion. Suppose there exists a probability of completing school in each year of age. Once school is completed, suppose one is subject to a risk of marrying specified by a probability of first marrying in each subsequent year. Under this arrangement the chances of marrying in any year of age is given by a sum of products of the probabilities. The sum is overall younger ages. For each younger age, the product is computed by multiplying the probability of completing school at that younger age by the chance of first marrying in the number of years since school completion appropriate to the difference between current age and the younger age. All of which is to say that under the simple example, the age at marriage distribution is a convolution of the age-at-school-completion distribution and the years-after-school-completion first marriage distribution.

If the world were as simple as the example--i.e. if ordering rules always operated, if the behaviorally important first marriage distribution depended only on time since school completion and not upon age itself, and if the form of both distributions could be specified, then there would be a straight forward analytic solution to the influence of changes in the prior distribution on the age distribution for the subsequent events. Indeed, Coale and McNeil (1972) have accomplished a decomposition of female first marriage rates under the assumption that that distribution is a convolution of a normally distributed

probability of becoming marriageable and a sequence of exponentially distributed waiting times for such events as "keeping company," becoming engaged, and marrying.

The transitions investigated as a part of the passage from school boy to adult do not seem to me to be amenable to such elegant modeling because norms of age as well as ordering appear to operate. Nonetheless, norms of ordering make it reasonable to presume that some reflecting of changes in school completion into marriage rates may be operating. If such a reflection occurs it is important for a substantive explanation of changes in the overall progression. It means that substantive explanations should first focus on why the shift in the prior distribution occurred. It may be that a large fraction of the "explanation" of change in the subsequent distribution is simply a reflection of those prior changes.

In the following I will argue that reflection accounts for much of the change in the age-at-marriage distribution during the Post World War II period. The next section will speculate about reasons for changes in the completion of education distribution. Then I will test the hypothesis that changes in the age-at-marriage distribution during the Post War period are reflections of changes in educational completion. All that follows will ignore entrance to the labor force as part of the sequence of events--not because that transition does not seem important but because the relationship between the OCG measure of timing for this event and the concept of first "real" labor force participation is a difficult one. This difficulty is one reason for here limiting attention the Post War eras. Surely the timing of labor force entrance must have loomed large in explaining marriage during the depression.

Accounting for Changes in the Completion of Education Distribution: A Speculation.

What can we say about changes in the age-at-school completion distribution during the period between, say 1947 and 1971? During this time, the median years of education was rising. The age at which 25% of cohort members completed their education was also rising. The age at which 75% of cohort members finished their education, however, was falling consistently. The duration of the school completion process for the cohort of 1929 was 9.4 years. For the cohort of 1950 it was 4.65 years. The majority of the decline in this duration is attibutable to shift of the upper quartile towards the median.

Why might such a change in the upper tail of the education-completion distribution have occurred? Those were the years of the peace-time draft. About half of the members of birth cohorts moving to adulthood during that period served in the Armed Forces. Although the necessity of service in the Armed Forces undoubtedly disrupted the process of school completion for many members of these cohorts, it may be that the rules of the peace-time draft are in some measure responsible for the shift to younger ages of the upper quartile of the school-completion distribution. During most of the peace-time draft, deferments were available for men completing a normal block of schooling. Men in college, for example, could retain deferred status while making normal progress. A disruption of schooling, however, resulted in a revocation of the student deferment and, in many periods, a markedly increased chance of being drafted. Because of this greater risk of being drafted, students considering dropping out of school for a while found it difficult to get good jobs,

especially ones which entailed much on-the-job training. The draft laws, then, probably generated incentives for students subject to the draft to make normal and continuous progress through a recognized regime of formal education. The effect of these incentives on the progress of all draftable studetns may, in its effect on the skew of the completion of education distribution, have overwhelmed the influence of disruption in completion due to military service; disruption experienced by only a fraction of those who actually served.

Accounting for Change in the Age-at-Marriage Distribution: A Test of the Reflection Hypothesis.

Without regard to whether or not the foregoing is a satisfactory explanation of the shift in the age-at-school-completion distribution, fairly marked changes occurred over this time period. What influence might these changes have on the age-at-marriage distribution? By analogy to the simple model presented above we might expect them to be reflected in the subsequent distributions. From Hogan's work, however, we know that it would not be reasonable to presume that individuals, especially in this period, are subject to the risk of marriage only after completing their education. Rather, it is more reasonable to presume that the odds of marrying at each age change according to whether or not one has completed his education and, perhaps, his military status. The problem, then, of testing the reflection hypothesis can be restated as seeing if the observed changes in age at marriage can be generated by passing cohorts through a set of conditional odds of marrying by age, which are, in some sense, fixed over time. This logic is familiar to demographers as being similar to a complex "standardization" problem.

Rather than treating the problem as one requiring a direct standardization, however, I have chosen to generate a table from the OCG data which can be thought of as containing the odds of marrying conditional on age, year, school completion and military status. Using log-linear methods, I have tried to generate a model which "explains" the fluctuation in these odds. Such a model might assert that there was a separate schedule of odds of marrying by age for each military and school completion group. It might also hold that those age-specific odds are inflated or deflated by a constant amount in a given period. Such multipliers would simply adjust for changing volume of marriages without rearranging their distribution by age. Indeed, there might be separate inflation or deflation factors for period by military status by school completion and still not directly affect the age distribution of fertility odds. So long as there does not appear to be an interaction between age, nuptiality, and period, we can conclude that gross changes in the age-at-marriage distribution over time are a result of men moving through the separate age schedules of risk for school completion and military service as well as temporal shifts in the volume of marriage by categories other than age. It would not be necessary, then, to posit some exogenous, behavioral shift over time in age-at-marriage preferences.

I proceeded to undertake this analysis in the following way. From the OCG II sample, I made a table which classified men by their age, military status, and school completion as of March for each year from 1947 to 1971. I further classified men as never-married or first-married in the subsequent year. Men married in a previous year were dropped. Ages used were 16 to 35. Military status included: (1) not served to

date, (2) presently serving, (3) separated from service within the year, and (4) service completed. The resulting table contained 8,000 cells representing 114,506 years of exposure to the risk of first marriage. (Note that conditional odds of marrying computed from this table are slightly biased upwards due to not including in the never-married category fractional years of exposure for those married in that year.)

The resulting table was subjected to log-linear analysis using a backwards selection technique for finding the optimum model (Goodman, 1971). (For a demonstration that such a log-linear analysis is tantamount to a logit analysis of the odds of marrying, see Goodman, 1975.) The result of these procedures are presented in Table 1.

The final model selected by this procedure (Model 4) does include an age, period, nuptiality interaction. The test of the null hypothesis that this interaction does not exist yields a Chi-square value of 535 with 456 degrees of freedom. The usual normal deviate approximation to probability levels for Chi-square distributions having large degrees of freedom (i.e. $z = (2\chi^2)^{\frac{1}{2}} - (2v-1)^{\frac{1}{2}}$, where v is the degrees of freedom) yields a normal deviate of 2.53 which is significant at about the .006 level. Thus, were there no age, period, nuptiality interactions in the table, a Chi-square value of this size would be unlikely by chance. Given the large number of observations in the table, however, this test is likely to be quite a powerful one. It is likely to detect interactions which are substantively unimportant for the purposes considered here. To investigate this possibility, I used the final model, excluding this interaction (i.e. Model 5) to produce the expected age, period, nuptiality table. I believe this process is analagous to a standardization

procedure where in the exposed population by age, period, military status and school completion is applied to a set of rates generated from the model. Having produced the expected age, period, nuptiality marginal, I proceeded to calculate age-specific rates for each period. Then, in synthetic cohort fashion, I calculated the quartile levels of the age-at-marriage distribution for a cohort of males living through the schedule for each period. Figures 3, 4, and 5 compare these levels with ones computed from the observed marginals. The expected levels match the main temporal shifts in age at marriage. Expected distributions miss some of the lowering of the age-at-first-quartile during the Korean War and somewhat overestimate the median and third quartile age during the late 1950s. Overall, however, a model excluding age, period, nuptiality interaction tracks the changes in the age-at-first-marriage distributions fairly well. Thus, it seems fair to assert that a good deal of the shift in the age-at-marriage distribution for males from 1947 to 1971 is a reflection into this generally "subsequent" distribution of changes in the completion of schooling process and the process of cohorts fulfilling their military "obligation."

Implications of these Results.

Shifting from the cross-sectional to the cohort perspective, it is likely that a good deal of the change in duration of the transition from school-boy to adult occurring to cohorts going through this transition in the post-war period is a result of changes in the age at school completion transition and movement in and out of military service. Earlier, I speculated that changes in school completion might be accounted for by the existence of the post-war draft. If that speculation is correct,

we might expect that some significant post-1970 changes in the age at school completion distribution and consequent changes in age at marriage.

The next important life cycle step for men subsequent to first marriage is birth of first child, a second child, and so on. Certainly the presumed changes in the age distribution of these events are conditional upon age at marriage. Might they not also reflect the influence of changes in the completion of schooling process and the process of military service? It is not possible to answer this question directly from the OCG II survey because no fertility information is available. Indeed, precious little data of any kind are presently available on male fertility--certainly not data which contain jointly information on age at school completion, age at initiation and termination of military service, age at first marriage and age at birth of first child.[4] Given this dearth of data and the expense of creating them, perhaps a conjecture about what they might show is appropriate.

It seems to me possible that changes in the completion of schooling distribution and the intervention of the "peace-time" draft in the male life cycle may be an important ingredient in explaining the post-World War II baby boom. It may be that the conditional odds of child-having by age for school completion, military status, first marriage, and such categories are relatively constant over time. It may be that "social forces" moving the population through these categories are the operative agent in generating the large number of births during the boom. That the existence of the peace-time draft plays an important role in this scenario does not offend conventional wisdom. We know that military call-ups play havoc with marriage and fertility schedules. Might not

a more or less permanent emergency play a similar but more persistent role?

If there is any truth in this conjecture it would be important to know about. Discussions about reintroduction of the draft are presently under way. In general, the polity seems quite willing to "tinker" with aspects of the early life cycle through laws about the minimum amount of schooling required, the instiution of peace-time drafts, proposals for universal military training, and even periods of general "public welfare" service for young people. Such policies may have strong, unintended demographic consequences which should be considered in relation to population as well as other social policy.

Table.1. Chi-square Statistics for a Backward Selection of Log-linear Models for a Table of Age by Nuptiality, by Period, by School Completion, by Military Status for Males 16-35 in 1947-1971.

Model # or Difference	Model of Description	Marginals Fitted	Degrees of Freedom	χ^2
(1)	All 4-way interactions	(MANS)(MANP)(MNSP)(ANSP)	1,368	816
(2)	Excludes (MANP) interaction	(MANS)(MNSP)(ANSP)	2,736	1,917
(2)-(1)	Tests exclusion of (MANP)		1,368	1,101
(3)	Reduces (MNSP) to (MNP)	(MANS)(MNP)(ANSP)	2,808	2,002
(3)-(2)	Tests reduction		72	85
(4)	Breaks up (ANSP) into (ASP) (ANP)	(MANS)(MNP)(ASP)(ANP)	3,264	2,502
(4)-(3)	Test division of (ANSP)		456	502
(5)	Drops (ANP)	(MANS)(MNP)(ASP)	3,720	3,040
(5)-(4)	Tests exclusion of (ANP)		456	535

M = Military Status
A = Age
N = Nuptiality
S = School Completion
P = Period

Source: OCG II Survey, March 1973.

Figure 1. Quartiles of the Age at School Completion, First Job, Armed Forces Service and First Marriage Distribution for Selected Birth Years.

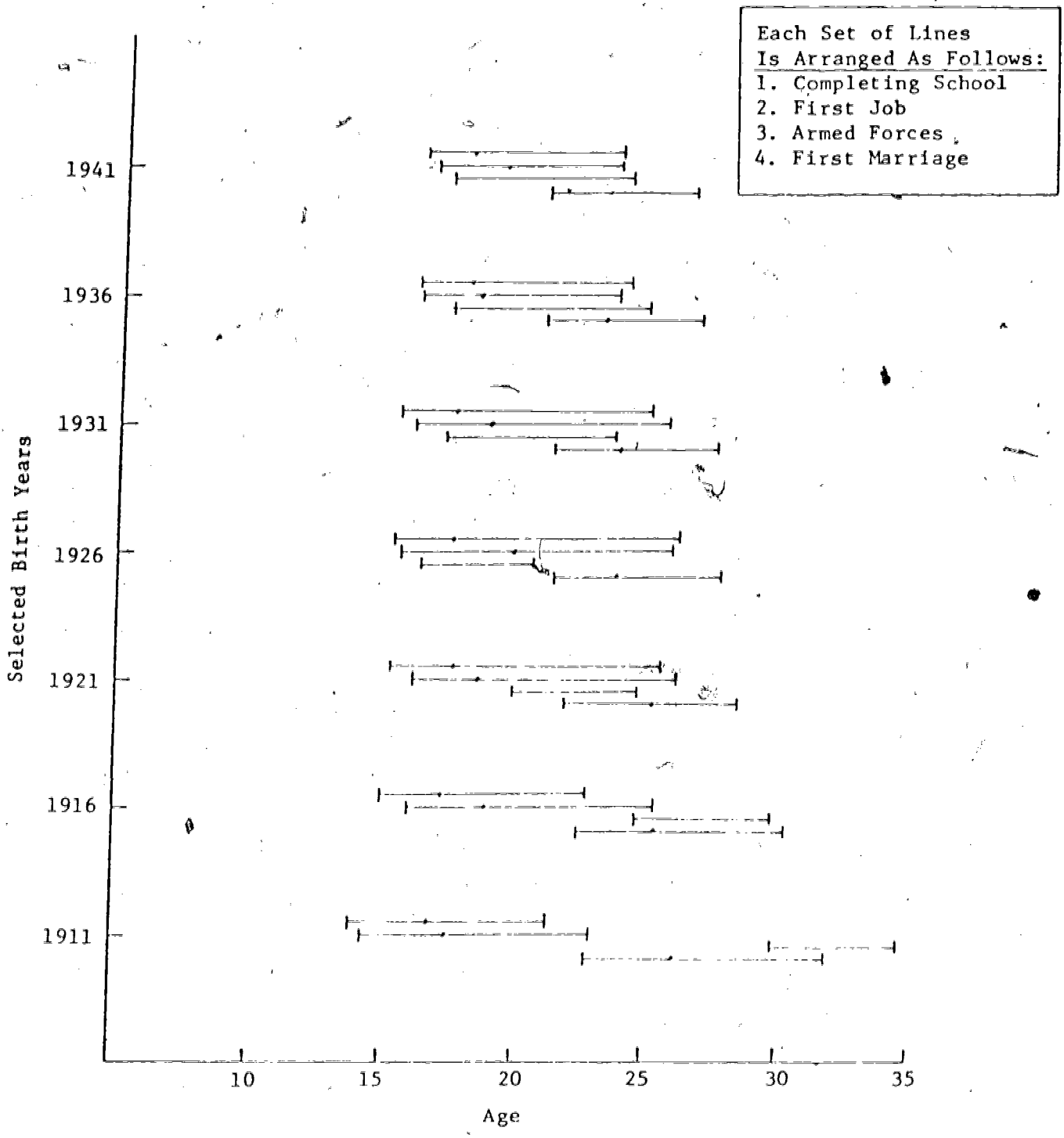
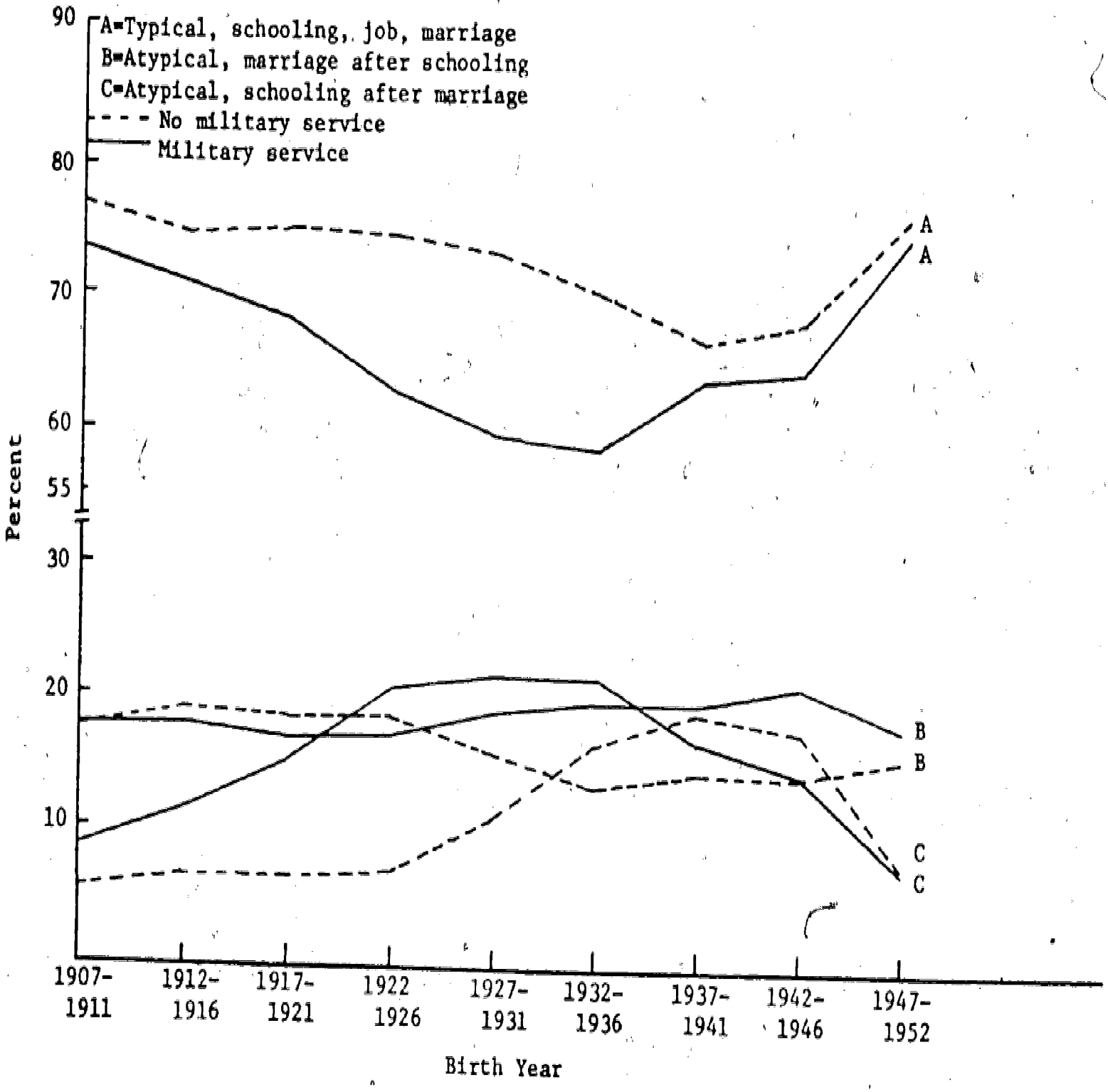


Figure 2. Percent of Five-Year Birth Cohorts in Each of Three Temporal Ordering Categories by Whether They Have Ever Served in the Military.



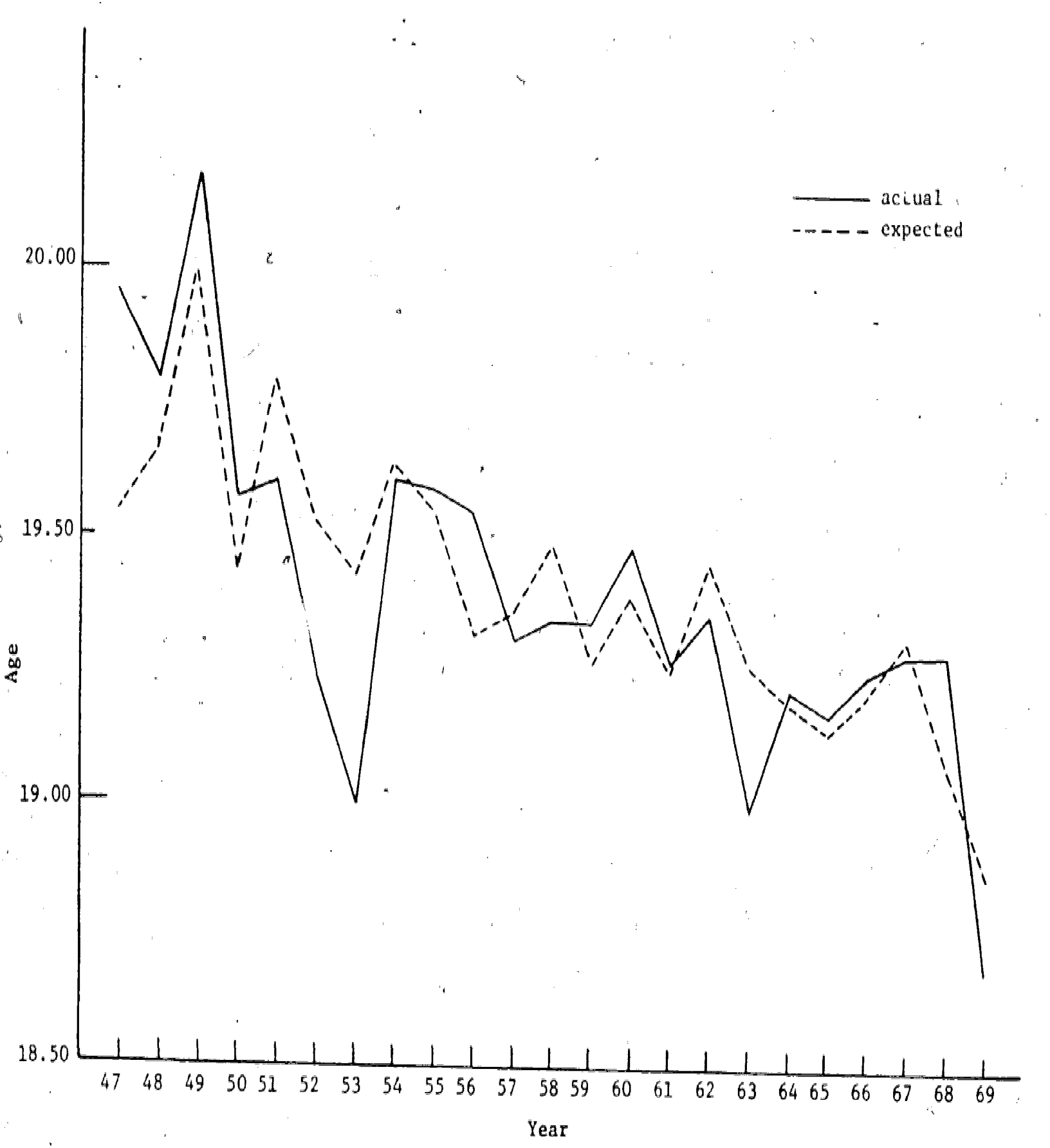


Figure 3. Actual and Expected Ages at First Quartile of First Marriage, 1947-1969.

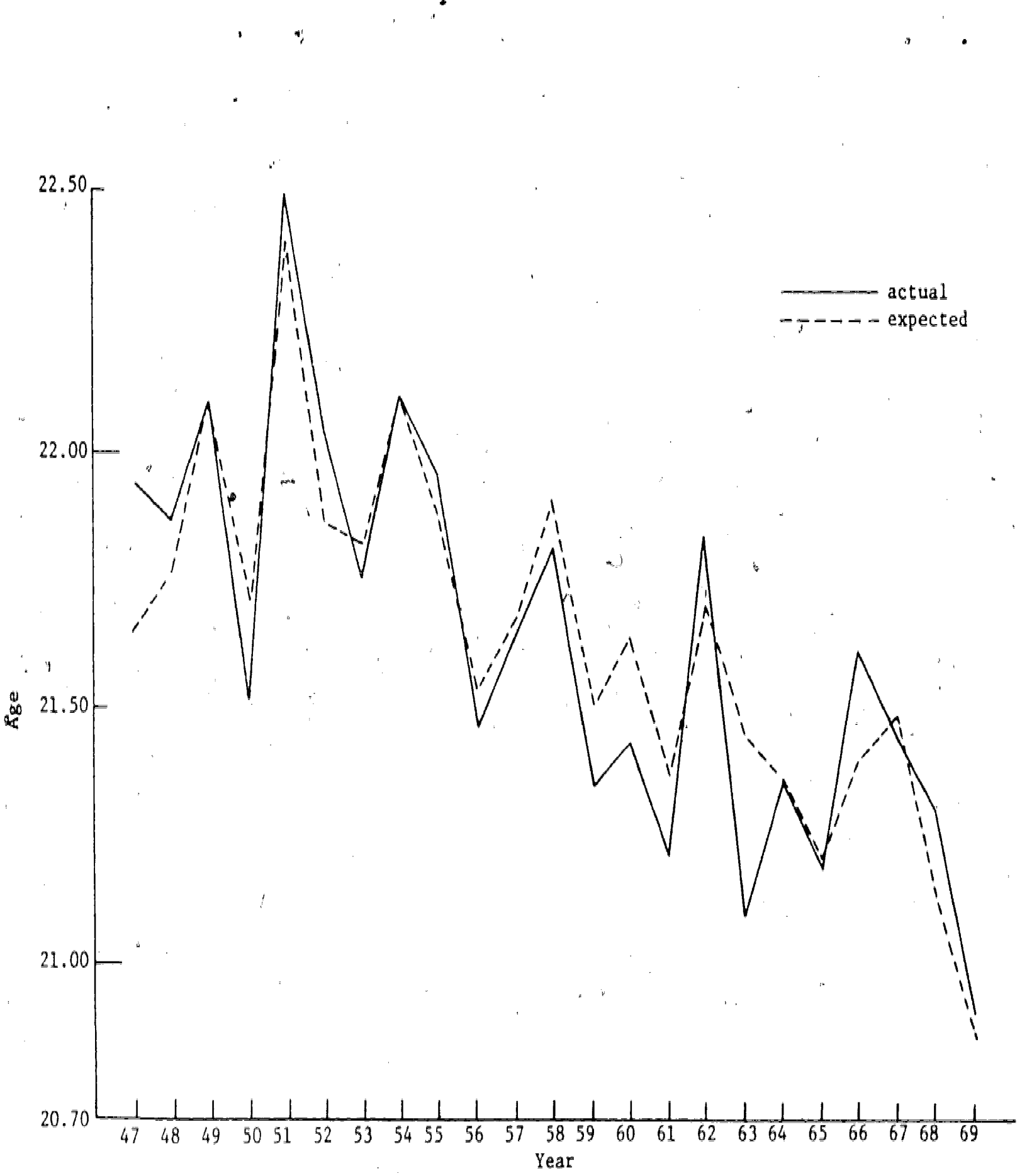


Figure 4. Actual and Expected Ages at Median Age of First Marriage, 1947-1969.

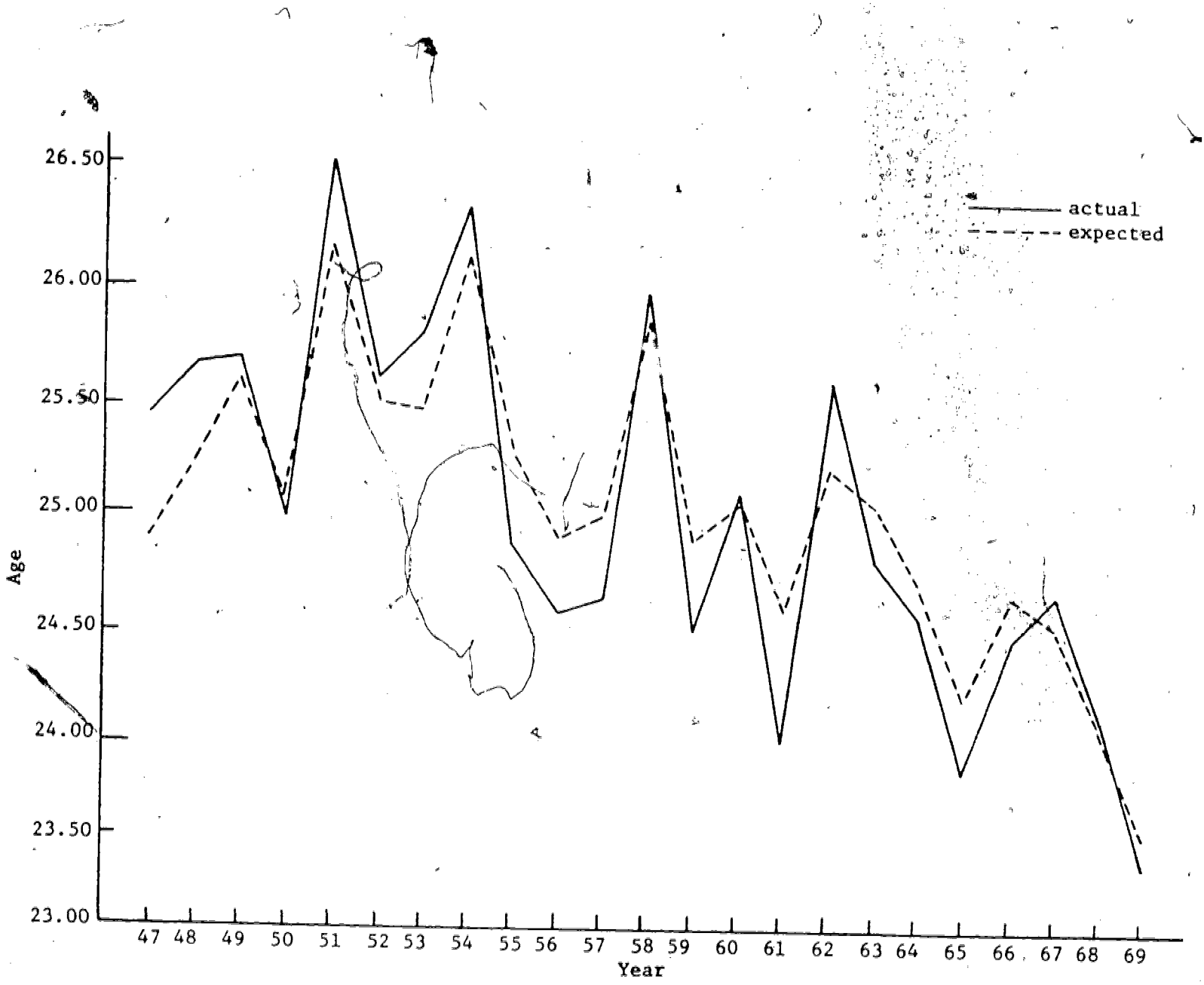


Figure 5. Actual and Expected Ages at Third Quartile of First Marriage, 1947-1969.

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